July 19, 1960

AFTER RECESS

(The trial reconvened at 12:45 o'clock p.m., pursuant to the taking of recess.)

THE COURT: You may proceed.

(Thereupon the reading of Dr. Wynder's deposition continued as follows:)

"Q Doctor, what does 'precancerous changes in the lungs' mean?

A Precancerous is a condition that is more likely to turn into cancer than normal tissue.

Q What do you expect to see when you look at precancerous tissues?

A In epithelial cancers, which we have studied in considerable detail in animals, we see this hyperplasia; we see carcinoma in situ; we see papilloma.

Q With respect to this last topic, that is, changes in human lungs, does that have a term in evidence? You have spoken now of presumptive evidence; you have spoken of epidemiological evidence.

A I have called it pathological evidence, which is a part of the sum total.

Q Has there been any laboratory evidence to support or to not support your view, and if so, will you tell us

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THE COURT: Proceed.

MR. HASTINGS: We would like to read the deposition of Dr. Arthur Purdy Stout.

I am going to ask Mr. Clinton Green to ask the questions.

MR. GREEN: "DIRECT EXAMINATION BY MR. HASTINGS:

"Question: Doctor, I am going to be asking you the questions for your statement now, and if there is anything that I ask you that you don't understand, ask me to repeat it if I am not making myself clear. Then, after I finish, Mr. Dyer will be asking you some questions on behalf of the Tobacco Company.

"Answer: Yes.

"Question: To begin with, Doctor, would you kindly state your name for the record?

"Answer: Arthur Purdy Stout.

"Question: And Doctor, you are a medical doctor, M. D.; is that right?

"Answer: I am.

"Question: Doctor, do you specialize in a particular branch of medicine?

"Answer: Yes, in pathology and oncology. I will explain that oncology has to do with the science of tumors.

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"Question: When you say the science of tumors, Doctor, does that include cancer?

"Answer: It includes cancer.

"Question: Doctor, I wonder if you could tell us what your background has been in respect to your specialty--"

MR. DYER: Excuse me. I hate to interrupt, your Honor. I have some basic objections I would like to incorporate in the record.

MR. HASTINGS: We have been through that.

MR. DYER: This is the Stout deposition.

THE COURT: All right, the jury will step out.

(Whereupon, the jury retired from the courtroom.)

MR. DYER: If it please the Court--

MR. HASTINGS: If defendant's counsel is going to read his entire brief, which he did in the deposition of Dr. Wynder, may I be prepared to read ours in rebuttal?

THE COURT: I don't think he will. Just refer to the other objection. On cases, don't cite cases.

MR. DYER: The defendant objects to the deposition of Dr. Arthur Purdy Stout on the grounds that the witness does not give a competent medical opinion with regard to the cause of death of Green; no reference made to Green in the deposition; no hypothetical is included stating

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the facts and circumstances concerning the death of Green.

Stout has done no research work on smoking and lung cancer other than work done with Dr. Auerbach which was confined to the microscopic pathology study of slides of tissue taken from the bronchial trees of persons dying of cancer of the lung and other diseases. He examined only a small fraction, less than 1/10th of these slides, of which there were 22,000 in a preliminary study alone.

At the most, he looked at 1,800 slides, according to his own calculations. His function was merely to act as consultant to Dr. Auerbach on slides of doubtful interpretation.

By his own admission, some of his interpretations were in error. He knew nothing concerning the history of the deceased patients from whom the slides were taken, nor whether they had been smokers or not.

The smoking histories of these patients were obtained by others, from the relatives of the deceased patients, the smoking histories on the patients' hospital records having been rejected as completely unreliable.

The basic objection to this study is that Stout looked at only a fraction of the slides himself; knew nothing of the smoking histories and did not collect them. He has no personal knowledge of what the great majority of the slides showed or of what relationship the alleged smoking

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histories bore to any of the slides. Any attempt by Stout to testify to the relationship between degrees of smoking and degrees of pathologic changes in the slides is hearsay upon hearsay. Any information Stout can give about smoking habits of the deceased subjects of his survey, would be inadmissible hearsay based upon hearsay.

MR. HASTINGS: Your Honor, Dr. Stout's studies are with Dr. Auerbach whose deposition we have, but we can't read both at once.

He is the man and he stated on page 19 that: ". . . I examined all these slides in which it was agreed--which we eventually agreed showed carcinoma in situ." That is his own examination. He states he was associated with Dr. Auerbach from the beginning in the subject of tumors which started about 1947, 13 years ago; but he states unequivocally he personally examined every single one of the slides having to do with the carcinoma in situ.

THE COURT: You can't state the history of the person--

MR. HASTINGS: This was done in conjunction with Dr. Hammond whose deposition we have here. This is a collaboration study. He is the statistician.

THE COURT: Take his examination parts of this thing without reference to any statistics and without relation to smoking of the persons.

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MR. HASTINGS: He was giving the history--

THE COURT: I don't care. That wouldn't help unless he took the history from the patient.

Mr. Dyer, why don't you put your letter in evidence about your objections to these and you can pretty well delineate them and you can put your response as arguments on the objection as we go along without repeating.

MR. DYER: Why can't we give the reporter our memorandum with an agreement between counsel with the approval of the Court that when any of these depositions are objected to, the reporter will automatically copy into the record our objection.

THE COURT: That is what I am suggesting. That will take care of it.

MR. HASTINGS: There is an exception to every ruling?

THE COURT: That he objects to this doctor's opinions because he didn't examine Green and didn't know anything about Green. He objects to him testifying as to experiments because he didn't make the experiments. As to where the slides came from, he does not know; but he does know in examining 1,800 slides, he knows what they show.

MR. HASTINGS: I believe he does know where they came from, but I will have to tie it in with these

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depositions.

THE COURT: As to those, if he personally handled those, that is something else.

MR. HASTINGS: He personally examined all of them at one time.

MR. DYER: Whenever an objection is raised to a deposition, I will give the court reporter a copy of my objection.

THE COURT: Yes, and he can give his response to your particular communication, if he so desires.

(Whereupon, the jury returned to the courtroom, and the following proceedings were had:)

MR. GREEN: Start at the top of page 3.

"Question: Doctor, I wonder if you could tell us what your background has been in respect to your specialty. By that I mean the following: One, your educational background; two, your postgraduate training and background; three, what societies you are a member of, Boards, et cetera, whether you have been engaged in teaching in your particular specialty, what hospitals you have been affiliated with, the number of medical articles that you may have written in your particular specialty of cancer

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or tumors. I think that will be sufficient for the time being.

"Answer: I graduated with a Degree of Bachelor of Arts from Yale University and with the Degree of Doctor of Medicine from the College of Physicians and Surgeons of Columbia University. I then had a two-year surgical internship at the Roosevelt Hospital, New York.

"Following that, I was appointed assistant attending surgical pathologist and instructor in surgery of Columbia University at Presbyterian Hospital. In the Presbyterian Hospital I have progressed through assistant surgical pathologist to surgical pathologist, and then I became the chief surgical pathologist in 1928 and remained that until 1951, when I was retired.

"In Columbia University I progressed through instructor in surgery, assistant professor, associate professor to professor of surgery, and later to -- in addition, to professor of pathology, being retired from professorship of surgery in 1951 and from professorship of pathology in 1954.

"Now I am the consultant in surgical pathology to the Presbyterian Hospital and the

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Francis Delafield Hospital in New York.

"If you want them all I will name all the other hospitals, too. I can't remember them all. I will have to look them up.

"I am also consulting pathologist for the Hospital for Special Surgery, New York; the New York Orthopedic Hospital, New York; the Hackensack Hospital, New Jersey; the Roosevelt Hospital, New York; the Mather Hospital, Port Jefferson, Long Island; the Rip Van Winkle Clinic, Hudson, New York; the White Plains Hospital, New York; the Englewood Hospital, New Jersey; the Women's Hospital, New York; St. Luke's Hospital, New York; Vassar Bros. Hospital, Poughkeepsie; Walter Reed Hospital in Washington, D. C.; the Oncologic Hospital in Puerto Rico; the VA Hospital in East Orange, New Jersey; the United States Army Hospital, Fort Dix; the Roswell Memorial Institute in Buffalo; the Lenox Hill Hospital and the Presbyterian Hospital in Newark.

"During my career I have specialized in tumors, that is, including cancer, almost from the beginning, when I was an undergraduate medical student, when I first became interested

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in tumors, and I have maintained that interest throughout my professional life and still retain it.

"During that period I have published 295 papers, almost all of them dealing with tumors and cancer. In 1932 I published a book "Human Cancer" and a great deal -- I won't say a great deal -- some of my papers have dealt with the experimental aspect of cancer; others with the clinical and pathological aspects of tumors.

"I am a member of the advisory boards of six journals. Do you want me to name them?

"Question: Would you please, Doctor?

"Answer: Including Cancer, Post-Graduate Medicine, Radiology, Excerpta Medica, Modern Medicine, the Yearbook of Cancer.

"I have an honorary membership in the Argentine Pathological Society, the Mexican Academy of Medicine, the Mexican Society for the Study of Oncology, the Anatomical Society of Paris, France, the James Ewing Society, the Mexican Association of Pathologists, the Colombia, South America, Society of Pathologists, and I am an Honorary Fellow of the American College of Surgeons.

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"I am a Member of the Committee on Pathology of the National Research Council, and I am Chairman of the Subcommittee on Oncology of that organization, which is the subcommittee devoted to bringing out brochures on the subject of tumors.

"I am a former president of the New York Cancer Society, of the New York Cancer Committee of the American Cancer Society. I am a Fellow of the Academy of Medicine of New York, of the New York Academy of Sciences, of the American Association for Research in Cancer.

"Do you want me to name the awards?

"Question: Yes, Doctor. Have you been presented personally with any awards, and, if so, what are they?

"Answer: I have the American Cancer Society medal for contributions to the control of cancer, the Janeway medal of the American Radium Society; the Clement Cleveland award of the New York City Cancer Committee for outstanding work in the campaign to control cancer; the James Ewing Society medal and the American Cancer Society citation for work in the pathological anatomy of tumors.

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"As my former titles indicate, I have been a teacher of surgery and pathology all my active life and still am, although I am retired.

"I think that covers it.

"Question: Doctor, you are a Member, of course, of the American Board of Pathology?

"Answer: I am a Member of the American Board of Pathology. The diploma is right up on the wall.

"Question: Doctor, could you tell us, just in simple terms: I believe you described oncology as a study of tumors, including cancer; is that right?

"Answer: Including cancer.

"Question: And pathology: could you tell us in simple terms what pathology is?

"Answer: Pathology is the study of diseased tissues, due to diseases of all kinds.

"Question: Are you concerned with the cause of disease as a pathologist?

"Answer: Yes; we are, certainly.

"Question: What methods does the pathologist generally use for his investigation of the causes of disease, to determine what disease is present?

"Answer: Well, a great deal of study by

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pathologists we might divide into two main groups. One is the study of the changes that occur in the tissues in man and animals that precede and lead up to the development of tumors.

"Question: What do you call those changes that precede and lead up to the development of tumors? Is there a term for that?

"Answer: Yes. There is a term, and that is 'pre-cancerous.'

"Question: Pre-cancerous?

"Answer: Pre-cancerous lesions.

"Question: I did not mean to interrupt you, Doctor. You were telling me about the study--

"Answer: Yes. The other way in which the pathologist concerned with tumors and cancer endeavors to learn about that subject is through animal experimentation, in which he tries to reproduce in animals the kind of tumors seen in humans, and he tries, also, of course, to find out the cause, and he tries to find some way of controlling it or curing it.

"Question: Doctor, as a tool for your study, is it correct that you will frequently

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section or cut parts of organs into small sections and examine them under a microscope?

16 "Answer: Yes. That is true. That is the main way of doing it.

"Question: And by organs I mean such things as the heart and lungs and other organs.

"Answer: Yes. Any part of the body at all.

"Question: And these pieces of tissue you put on an object called a slide; is that right?

"Answer: Yes. A piece of glass, so that you can see through it.

"Question: And then you examine it under the microscope?

"Answer: You cut the piece of whatever it is you are examining with an instrument called a microtome, which cuts very thin slices, so thin that you can see through them, and we use various dyes and stains so that the cells stand out and can be recognized.

"If you look at ordinary fresh tissues, except with an instrument called a phase microscope, it is very difficult to recognize anything unless you stain it.

"Question: Doctor, have you recently, in the last few years, conducted any study with

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respect to lung cancer and the possible cause of lung cancer?

"Answer: Yes. In association first with Dr. Auerback, who is the head of the pathology laboratory at the East Orange Veterans Administration Hospital -- I have been associated with him right from the beginning of our interest in the subject of the lung and its tumors, which started about 1947, nearly 13 years ago.

"Question: Doctor, as a result of your investigations, have you come up with any casual or etiological agent that you feel is associated with lung cancer or a particular type of lung cancer?

"Answer: Well, we were extremely interested in the subject of the relationship of tobacco and, in particular, to cigarette smoke, with the induction of pre-cancerous and cancerous changes in the lining of the bronchi and the trachea, the bronchi of the lungs.

"Question: When you are speaking of linings, those are in human lungs, not animal lungs?

"Answer: These are human lungs, yes.

"Question: Doctor, for a study of this, where did you get these human lungs?

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"Answer: Well, we got a great many of them from the veterans dying in the East Orange VA Hospital to start with, and later on we got lungs not only from there but from other hospitals as well.

"Question: Now--

"Answer: But the large majority of them were from Veterans Administration Hospitals.

"Question: Doctor, you speak of pre-cancerous and cancerous changes on these slides of lung tissues. Could you tell us just what are the medical terms for these pre-cancerous and cancerous changes?

"Answer: Well, another term for -- that is used in carcinoma in situ, which means a change in the cells composing one part of the body that is exactly the same as is found in cancers that kill, only we talk about it as being in situ, or in place, because these changes cells are still in the situation where they originally were. They haven't moved away from that particular site.

"When a cancer develops, its cells then multiply and move away from that particular site.

"Question: The term 'carcinoma' refers to a type of cancer; is that correct?

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"Answer: Yes.

"Question: You speak of carcinoma in situ. What does 'in situ' mean?

"Answer: It means in the place where the cells develop -- where they grow, I should say.

"Question: Doctor, are there other changes that are earlier changes but yet not normal to the tissue, which are pre-cancerous, before cancer begins?

"Answer: Well, when we started this study, nearly 13 years ago, we had very little idea about what the changes were that did occur in the lungs, and it took us some time, and it took the study of a great many thousands of sections before we realized that there were a number of changes that took place which were not cancerous changes but are often associated with cancerous changes after the carcinoma in situ develops.

"One of these changes is a multiplication of the basal or deepest layer of cells of the lining mucous membrane. This we refer to as basal hyperplasia. 'Hyperplasia' means multiplication of cells, and that can take place, of course, without cancer, but we found that it was more often associated with the true cancerous

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changes than not.

"Another change that takes place in the lining mucous membrane of the bronchi is called squamous metaplasia. By that is meant that the ordinary cells of the bronchi, which have a special arrangement, lose that normal arrangement and assume the appearance that we find especially in the skin, for example, or the lining of the mouth. The cells flatten, and they get sometimes keratinized. Keratin is the material that protects the skin surface of the body from drying and from injury.

"Question: Doctor, I am sorry. Have you finished in terms of the types of changes--

'Answer: Well, I can go on and give the other types, if you want.

"Question: Yes, please, Doctor.

"Answer: Then, that is a change that when we first started we thought was probably going to be associated with cancer, but we found that that did not have the real significance that we expected, because it was found in lots of conditions of infection in the lung.

"Then there is a change that occurs in the mucous membrane of the bronchi, in which the

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cells lose their orderly arrangement and become disorderly, and in addition to that the cells may change their size and shape.

"All that, however, is not what we regard now as carcinoma in situ. The carcinoma in situ, as we recognize it, is a conversion of all of the lining cells of the bronchi into cells indistinguishable from true infiltrating cancer.

"But to be called carcinoma in situ, it isn't enough for us to have just some of these cells. We know that from experience that will probably go on to develop into carcinoma in situ, but we were very careful to use the term 'carcinoma in situ' only when all of the lining cells of the bronchi were so converted that they looked like cancer cells.

"Question: Doctor, the various types of cells that you have been referring to: I hand you now a diagram and ask you if these are the cells you are talking about, that is, a picture of them, and whether those pictures were made under your supervision.

"Answer: Yes; they are."

MR. HASTINGS: Will you mark this for identification? This is made under his supervision, describing the

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cells he has talked of.

THE CLERK: It will be marked as Plaintiff's Exhibit No. 2 for Identification.

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(The foregoing instrument was marked Plaintiff's Exhibit 2 for Identification.)

MR. HASTINGS: I would like to offer this in evidence.

MR. DYER: We object to the offer in evidence. In the first place, it is being submitted simply for the purpose of showing the different kind of cells. The title on it is not relevant.

THE COURT: The title should be eliminated.

MR. DYER: In addition to which, the photographs are not identified as having been taken of any individual who smoked or didn't smoke, and in addition to which--

THE COURT: We are eliminating the title.

MR. DYER: My objection is that it is simply confusing to the jury because it isn't related to any person who smokes.

THE COURT: It is only admitted for the purpose of showing how cells change; so the jury may understand better some of the testimony of the doctors.

It will be admitted in evidence.

THE CLERK: Admitted in evidence as Plaintiff's Exhibit No. 2.

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(The foregoing instrument marked Plaintiff's Exhibit No. 2, was received in evidence.)

THE COURT: It has nothing to do with the direct question in this case. It is an aid to understanding.

MR. DYER: That clarifies my position.

MR. HASTINGS: We will pass that around later.

MR. GREEN (Continuing):

"Question: Doctor, did you undertake to make a study of a group of slides and sections of patients who had died and of whom you knew nothing concerning their history, that is to say, whether they were smokers or non-smokers?

"Answer: Yes; we did.

"Question: How many different sections did you examine or, let me ask you this: How many different slides were examined?

"Answer: Well--

"Question: Just roughly. I don't mean exactly.

"Answer: Each case we sectioned according to a definite plan, and the total number of sections from each case was 208 and--

"Question: How many cases were there, Doctor?

"Answer: In the preliminary study that we

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made there were 117 cases, and that added up to 22,000 slides.

24 "Question: Doctor, did you then classify these slides as to whether they showed the various conditions that you have spoken of before, that is, whether they showed carcinoma in situ or whether they were normal or whether they showed basal cell hyperplasia, or atypical cells?

"Incidentally, what does 'atypical' mean?

"Answer: Atypical cells mean changed from the normal.

"Yes, we did.

"Question: In following that, at the time that you did this classification, did you know anything about whether the individual from whom this particular piece of lung tissue was taken was a smoker or a non-smoker?

"Answer: No; we did not.

"Question: All right. Then you made your classification, as it were, blind, without knowing the history?

"Answer: Yes. This was a study made and published in 1957.

"Question: I see.

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"Answer: There has been a subsequent study, in which the total number of white males was 402.

"Question: I see.

"Answer: And some of these died of cancer; some of them did not. Some were smokers and some were not. And we had no idea at all when we made this study as to what the case we were studying looked like. In fact, the slides were fed to us in a completely mixed-up fashion.

"MR. DYER: I didn't get the date of that, Doctor, the last one that you were talking about.

"Answer: Well, the last one is the one that has just been presented by -- well, the paper was presented by Dr. Auerbach but represents the work of Dr. Auerbach, myself, Dr. Cuyler Hammond and Lawrence Garfinkel. That was presented December 4, 1959, at the clinical meeting of the American Medical Association, and that hasn't yet been published."

MR. DYER: I would like the record to show my objection and I would like to make a motion to strike the previous answers on the basis that the date of 1959 as being long subsequent to the lung cancer of Green; and on the further basis, that it was a four-man study.

THE COURT: If we get to the results of

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the study, we will consider your objection at that point.

MR. GREEN (Continuing):

26 "Question: All right. Now, Doctor, did this study show anything with respect to cigarette smoking?

"MR. DYER: Which study?

"MR. HASTINGS: This study, and also the study that the doctor--

"MR. DYER: Let us keep them straight, because he is talking about two different ones, as I understand it.

"THE WITNESS: All right. I will explain the difference, so you will be able to understand it.

"Question: Let me get my question first, Doctor:

"Did any of these studies show anything with respect to cigarette smoking?

"Answer: Yes; indeed they did.

"Question: Tell us what they showed."

MR. DYER: I renew my objection.

THE COURT: Sustain the objection.

MR. HASTINGS: Which one is that?

THE COURT: The studies he said he did not know where these came from.

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MR. HASTINGS: He did not say that. There has been no testimony to that effect.

THE COURT: Yes, he said the slides-- He said he didn't know where the slides came from. They came to him in a mixed-up fashion.

MR. HASTINGS: This is another study.

"Did any of these studies show anything with respect to cigarette smoking?"

THE COURT: That is his conclusion. He had no right to make it any more than an ordinary person on the street unless he can show where they came from. A medical man is not a miracle man. He is a plain, ordinary citizen and he can testify what he knows by his own experience and experiments.

MR. HASTINGS: On page 18, it says: "Of course, Dr. Hammond, who devised this system of study, knew what all the slides were, what kind of cases they all came from. . ."

We have Dr. Hammond's deposition here.

THE COURT: Let's let him testify for himself.

MR. HASTINGS: Then, can we read it after Dr. Hammond's?

THE COURT: No, that would be hearsay with him, what Dr. Hammond said.

MR. HASTINGS: One knew the smoking history and

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the other knew the pathology.

THE COURT: He can testify what the slides showed. I think you have got that down there below; in the second study, and you can read that.

MR. DYER: What page?

MR. HASTINGS: Page 18.

"Question: In this second study, we felt that the first study might be criticized, in the first place because the cases were presented to us, or we didn't know any smoking history; they were presented to us, the slides were, as a whole set, so in order to obviate any bias or prejudice at all, so that we couldn't have any idea, all the slides were mixed up and they were presented to us helter-skelter.

"Of course, Dr. Hammond. . ."

MR. DYER: I object to what Dr. Hammond did.

MR. HASTINGS: Jump down to the other part--

MR. DYER: At the top of page 19, it shows he is talking about what Dr. Auerbach said. He examined every slide.

"I did not examine every slide. I only examined those slides in this second study that were perhaps questionable. . ."

MR. HASTINGS: Examined every slide that was

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carcinoma in situ.

"I examined all the slides in which it was agreed -- which we eventually agreed showed carcinoma in situ."

THE COURT: He can say what he found in his examination.

MR. HASTINGS: Page 18, at the answer there:

"Answer: We also wanted to make sure of another feature, and that was that we were not confusing squamous metaplasia with carcinoma in situ; so before undertaking this much more extended study, we laid down very definite criteria, much more stringent criteria than we had in the first study."

THE COURT: Now we stop there.

MR. HASTINGS (Continuing)

"Dr. Auerbach examined every slide. I did not examine every slide. I only examined those slides in this second study that were perhaps questionable, and I examined all the slides in which it was agreed -- which we eventually agreed showed carcinoma in situ.

"So that my part of this was not nearly as onerous as Dr. Auerbach's, because he looked at every slide.

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"Question: With respect to those, Doctor, that you looked at, that were actually carcinoma in situ -- as I understand it, these others were not carcinoma in situ; they were atypical cells, but not carcinoma in situ?

"Answer: That is correct.

"Question: With respect to the people who were either non-smokers or occasional smokers, were you able to find any showing of carcinoma in situ?"

MR. DYER: I object on the same grounds.

MR. HASTINGS: These are non-smokers.

THE COURT: He wouldn't know. That would be his opinion they were not. Nobody told him. That is the reason you eliminated it. Unless you know the facts, your experiments are of no value.

MR. HASTINGS (Continuing):

"Question: How many sections in all were examined of the non-smokers and occasional smokers?

"Answer: 3,324."

THE COURT: That is next.

MR. HASTINGS (Continuing):

"Question: Doctor, did you come to a summary in respect to your study?

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"Answer: Yes.

"Question: And Doctor, would you tell us what your summary was then and what conclusions you personally drew?

"You may refresh your recollection from it or paraphrase it, but we want your testimony.

"Answer: To me this meant that we saw no evidence. . ."

MR. DYER: Same objection.

MR. HASTINGS: All right. Page 21 at the top.

MR. DYER: I object to the conclusions.

MR. HASTINGS: As a scientist, studying tumors all his life--

THE COURT: He is talking about his conclusions from a test in which he only examined the matter submitted to him. He can testify as to that.

MR. HASTINGS: As a physician, he can give us a conclusion as Dr. Wynder did.

THE COURT: If you ask that question, but you haven't asked yet.

MR. HASTINGS (Continuing):

"Question: And Doctor, would you tell us what your summary was then and what conclusions you personally drew?" Page 20.

MR. DYER: That is what we objected to.

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MR. HASTINGS: I am asking his opinion.

THE COURT: His opinion is based upon hearsay. Do you ask in here what he found on those slides?

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MR. HASTINGS: Yes, but it is related to smoking.

THE COURT: He said he didn't know one from the other.

MR. HASTINGS: He was reading them blind without knowing whether they were smokers or non-smokers and then they were identified.

THE COURT: Nobody else told him that.

MR. HASTINGS: It is all a matter of record.

THE COURT: I don't think this man examined a single one of those fellows.

MR. HASTINGS: He was only the pathologist. He examined the slides.

THE COURT: It has been ruled many times you have to have the man examine slides and have the man that sent the slides in. I will let him testify what he saw on the slides he examined but not what he thinks they showed.

MR. HASTINGS: It is what the records of the Veterans Hospital showed.

THE COURT: We should have the records here, if we get into that.

MR. HASTINGS: 22,000 slides, and then to get the

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records--

THE COURT: He does not know one from the other. Someone told him. It might be the office boy told him.

MR. HASTINGS: Dr. Hammond told him.

THE COURT: How did he get them? Maybe somebody told Dr. Hammond. I think he examined them and he is a very capable and well-prepared man and all that. If you have anything in here that passes on--

MR. HASTINGS (Continuing):

"Question: Doctor, I believe you said you first began studying this problem back in 1946?

"Answer: 1947.

"Question: 1947. Can you tell us, Doctor: is that the time, or when was the time when it struck your mind as being a possibility, a definite possibility as to the relationship between cigarette smoking and lung cancer -- not a probability and not a proven thing, but when did it first appear to you scientifically to show a possibility of there being a relationship?"

MR. DYER: I object and did object at the time of the question as to relevancy and possibilities.

THE COURT: This is merely a time. I will let

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him answer.

MR. HASTINGS (Continuing):

"Answer: If you will permit me, I will tell you what first attracted my attention to a relationship between tobacco and cancer. Do you want me to tell that?

"Question: Yes, Doctor, and fix the time.

"Answer: It was before cigarette smoke came into the picture.

"Question: Yes.

"Answer: In 1935 I was in Sweden at an institution in Stockholm called the Radiumhemmet, which is a cancer institution in Sweden. That is a cancer institution known all over the world. And while I was there I saw in wards of their hospitals a number of women of the Lapp race."

MR. DYER: I object as irrelevant what the Lapp race does because the matter has no relationship to the question.

MR. HASTINGS: He has given his reason based upon his own examination of these people. These are his own examinations of these people.

MR. DYER: He didn't examine any Lapps.

MR. HASTINGS: He said, "I was there and I saw in wards of their hospital a number of women. . ."

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MR. DYER: Women of the Lapp race.

MR. HASTINGS: He thought it was relevant.

THE COURT: He was there and saw a number of women of the Lapp race. Start on page 24, where he says, "They have a very interesting habit--"

MR. HASTINGS: (Continuing)

"They have a very interesting habit, the women. They chew tobacco, and they hold a quid of tobacco in one part of the mouth. I don't know but what they sleep with it there. At any rate, it's there all day.

"Then, from time to time they change the quid, but they never change the spot, and I saw a great many of those women with cancer of the lining of the mouth site where they held the quid.

"Cancer of the lining of the cheek is very uncommon, indeed, in ordinary women. We do not find that. That made a tremendous impression on me, and I think it really directed my attention to the relationship of tobacco to cancer at that time."

MR. DYER: I object to the balance of the question on the basis that it is irrelevant, immaterial and based on hearsay.

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THE COURT: Yes.

MR. HASTINGS: He states in the next part when he was connected with the Veterans Hospital and so on and what he found. This is what he knows. He is associated with the men.

THE COURT: I wonder if he knew all the old tobacco chewers kept that quid in their cheeks.

MR. HASTINGS (Continuing):

"--and having been a veteran of the first World War myself, and having known, of course--" and so on. "--I knew personally."

MR. DYER: If you will look on page 43 and 44, he testifies he was told by General Callander in the main office of the Veterans Administration in charge of all the pathologists and of pathology, and when he was asked: "That was what somebody else told you?" he answered, "Oh, yes. I don't know that of my own knowledge. I don't have anything to do with that." It is all hearsay.

MR. HASTINGS: Counsel is reading from '59 and the first World War.

MR. DYER: 1945.

MR. HASTINGS: 1945 wasn't World War 1. He said, "right after the second World War. At that time I began to be connected with Veterans Administration Hospitals. . ."

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MR. DYER: Where does it say the second World War?

MR. HASTINGS: After 1945. "about 1945, right after the second World War. At that time I began to be connected. . ."

THE COURT: What he says is his impressions and his alarms.

MR. HASTINGS: Is he entitled to give his impressions?

THE COURT: No, he can give his experience; but his impressions, he isn't any more entitled to than anybody else. His medical findings, yes. I think at page 25 it is summed up in the first sentence in the first paragraph.

MR. HASTINGS: (Reading)

"When I started in with the Veterans Administration Hospital down at Halloran Hospital on Staten Island, I was appalled to see the number of veterans who died of cancer of the lung."

THE COURT: Stop there. You can start with "I think the same thing struck Dr. Auerbach. . ."

MR. HASTINGS (Continuing)

"I think the same thing struck Dr. Auerbach, too, and the two of us determined to see if we could find some changes in the lungs that might be associated with the development of lung cancer and cigarette smoking.

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"That's the way I got into it."

I would like to read part of the cross in here.

38 THE COURT: Let Mr. Dyer have the first shot at it. This is cross-examination of the doctor by Mr. Dyer.

MR. DYER (Reading):

"Question: Doctor, didn't you have any private medical practice?

"Answer: No; I do not.

"Question: Have you ever been in private practice?

"Answer: Well, in a very half-hearted way.

"Question: How half-hearted?

"Answer: Well, I will tell you: when I graduated from my surgical internship at Roosevelt Hospital in 1914, I was a surgeon, and I started in to do some surgical practice as well as surgical pathology; but after serving in the first World War as a surgeon, I decided that I was no longer interested in the clinical side and determined to spend the rest of my life in pathology and laboratory study.

"Question: Have you done any research work on the question of the relationship of smoking to lung cancer other than the two studies that

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you have told us about with Dr. Auerbach?

"Answer: No. I would say I haven't.

"Question: I guess Dr. Auerbach was referred to as the senior author in those papers, was he not?

"Answer: Yes. Yes; that's correct.

"Question: And do I understand you correctly to say that you did not examine any of the slides in the study that was published in 1956 and 1957?

"Answer: Oh, no. I examined more of those than I did in the second one.

"Question: I see. Will you tell us about how many you did examine, for instance, in the 1956 study, the very first one that was made? Do you have any idea how many you looked at, yourself?

"Answer: I will try to come up with it. It would have to be a very rough estimate.

"Well, I guess between five and six hundred.

"Question: There were 41 cases involved in that study, were there not?

"Answer: The very first one, yes.

"Question: And can you give us any idea

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about how many slides you looked at in the study of 1957?

"Answer: Well, I would say it's a purest guess. I never kept any count of it. Seven or eight hundred would be my guess."

Then to the second question on page 28:

"Question: As I understand it, in the last study, which was made public in December of 1959, your function in that was to act as a consultant whenever the senior author questioned the accuracy of his own interpretations; is that correct?

"Answer: That's correct.

"Question: Is that a correct statement?

"Answer: Yes. That's correct.

"Question: And can you tell us about how many of these doubtful interpretations you were consulted on?

"Answer: I can't answer that quest. n. Since I'm up here, having sworn to tell the truth, the whole truth and nothing but the truth, I don't know how I can answer that question.

"Understanding that it's a pure guess, I would say, again, between four or five hundred.

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Four hundred, let us say.

"Question: In other words, Dr. Auerbach said to you, 'I have questions in my mind as to the proper interpretation of the accuracy of my interpretation of this slide. Will you look at it? Is that right?

"Answer: Yes.

"Question: And that occurred in approximately 400 cases, 400 slides?

"Answer: Well, that's the purest guess. I can't tell you, really.

"Question: Can you tell us what was doubtful in the interpretation?

"Answer: Well, sometimes it's quite difficult to determine whether a cell really shows -- no, let me put it this way -- whether the changes in the cells covered the full thickness of the particular area we were studying or whether they did not; and if Dr. Auerbach had questions in his mind whether they did or did not, then I would look at them, and generally whatever I said he would agree to.

"But in the vast majority of cases, we both agreed without any question.

"Question: You, of course, consulted with

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Dr. Auerbach on the slide designated as so-called carcinoma in situ in the 1957 study, did you not?

"Answer: Yes, and I saw all the ones in this one, too.

"Question: And in the 1957 study, did you and Dr. Auerbach agree which slides were to be designated as carcinoma in situ?

"Answer: Yes.

"Question: Of course, in that study, definite carcinoma -- that is, in the 1957 study -- this so-called carcinoma in situ was definitely found in five out of sixteen non-smokers, was it not?

"Answer: Yes, but as we tried to show, there was a question as to whether we were not interpreting some cases of squamous metaplasia as carcinoma in situ."

THE COURT: Go ahead.

MR. DYER (Continuing):

"Answer: We really undertook the second study because we thought that we had included some cases of squamous metaplasia as carcinoma in situ, and we wanted to make very sure that we were not misinterpreting things. So we

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then spent quite a considerable amount of time setting up very definite criteria, which I think everybody in the field would agree with -- at least everybody that we have ever shown these things to now, these latest ones, have agreed should be called carcinoma in situ.

"There was a question about some of the cases in this second study.

"Question: In the 1957 study--

"Answer: In the 1957 study.

"Question: -- I understood you to say that you and Dr. Auerbach did agree on the slides that were at that time interpreted as being carcinoma in situ.

"Answer: Yes, we did, and I think we were in error in some of them.

"Question: Do I take it that it is not too difficult a thing for one pathologist to disagree with another pathologist on the interpretation of a slide that he may look at?

"Answer: From the bronchi, yes.

"Question: That is a very easy thing to have pathologists differ on, isn't it?

"Answer: Oh, yes, it is, indeed, except-- now, let me specify that there are certain types

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of changes that all pathologists will agree on seeing them. There are other types on which there is a difference of opinion among pathologists. That is true of, of course, of carcinoma in situ in all parts of the body.

"Question: There are many pathologists that will not accept the interpretation of carcinoma in situ, are there not?

"Answer: You mean, not at all?

"Question: At all, as a classification.

"Answer: I don't know of any. There may be, but none that I am associated with will agree that that is a complete misnomer.

"Question: Am I correct in my interpretation of your testimony to the effect that you say that basal cell hyperplasia is not precancerous, that is, it does not turn into cancer?

"Answer: Doesn't become a cancer? I don't know the answer to that. I can only say that in those individuals who have a definite infiltrated cancer, that everybody will agree is a cancer, that basal hyperplasia is found more frequently than in those who do not. So there is some kind of an association.

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But whether basal cell hyperplasia is actually those particular cells turning into a cancer, I don't think we have any proof.

"Question: Is the same thing true of carcinoma in situ?

"Answer: No; I think not.

"Question: Is it your opinion, Doctor--

"Answer: I was going to say, of course, we were interested to see whether carcinoma in situ in the bronchi was associated with infiltrated cancer, and in a small number of instances we found that it was.

"Question: Has there ever been a carcinoma in situ identified that later on developed into an invasive cancer and was proven so by pathological means?

"Answer: Well, in the bronchi you don't have the chance to do that. In other parts of the body, yes, but in the bronchi, if you take the thing out, well, you haven't got a lung any more to have things happen.

"Question: When you revised your classification in the 1959 study from the 1957 study, the net effect of it, was it not, was to take some of the squamos metaplasia into the classification

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formerly known as carcinoma in situ?

"Answer: I think we probably took some of the lesions that we in the 1957 study had called carcinoma in situ. In the 1959 study we took those out. There were no -- I am quite sure now, there were no lesions which could possibly be interpreted as squamous metaplasia called carcinoma in situ in the 1959 study.

"Question: And of course, in the 1959 study, the standard that you adopted in the 1957 study in obtaining epithelium through study was greatly lowered, and you got a great many more slides; is that not so?

"Answer: Well, this is what was done: in the 1957 study there were 208, I think it was, sections made from each case of the lung. Our statistician, Dr. Hammond, decided that it was not necessary to study that number of slides from each case. Therefore I think the average number of slides taken from each case was about 55.

"Question: In other words -- excuse me. Go ahead.

"Answer: And of course, there were a great many more slides, because there were a

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great many more cases.

"Question: Actually there were a great many more cases, but proportionately fewer slides?

"Answer: I don't think so. I will tell you why: because a great many of the slides had to be discarded because they didn't have any lining epithelium on them.

"Question: In the 1957 study, is it not a fact that you found 12 heavy smokers that showed none of the so-called carcinoma in situ at all?

"Answer: If it says so on the article, then that is so.

"Question: Is that your recollection? It is your recollection, is it not?

"Answer: Yes, I think so. Of course, I have explained why we suspected that--

"Question: Now, in the 1957 study--"

And then there is an interruption, and then:

"Answer: --why we suspected that that was a questionable finding.

"Question: And in the 1957 study, your so-called definite and borderline carcinoma in situ occurred with the same frequency in the

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trachea as in the other parts of the tracheobronchial tree?

"Answer: We found out again that we were calling a number of squamous metaplasias carcinoma in situ.

"Question: Of course, cancer of the trachea is rare, is it not?

"Answer: Very rare. If you are interested, I can tell you why I went astray on that.

"Question: Why, what?

"Answer: Why I went astray on that. Do you want me to answer that or not?

"Question: What you are telling me now is that your 1957 study really wasn't a good study?

"Answer: I thought it was a very good study, but I thought we had some errors in it, and I think we determined what those errors were and have corrected them in the 1959 study.

"Question: Doctor, you did not think there were any errors in it at the time it was published with your name as a co-author?

"Answer: That's true. That's true.

"Question: In that same study, non-smokers exhibited all the changes that were noted in

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smokers, yes. I wouldn't say all of them by a longshot.

"Question: Let me ask you if this is not a correct statement made by you with respect to the 1957 study:

'All the findings pointed to the fact that in the group of patients who had never smoked regularly, there are changes in the tracheo-bronchial tree entirely similar in distribution but less extensive than those in the other three smoking categories for cancer of the lung.'

"Answer: We believed that at that time.

"Question: And do you not believe that today?

"Answer: Not to that extent, certainly.

"We have just completed another study which had a very great deal of bearing on our interpretation of some of the squamous metaplasia as carcinoma in situ, because we have now studied 57 children, their lungs, and in not a single child's lung did we find carcinoma in situ, but we found plenty of squamous metaplasia, and we now, I think, have learned properly to recognize squamous metaplasia, what it is.

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"Question: Is this a new study that we haven't heard about before, which you have just told us about?

"Answer: Yes. Dr. Auerbach is out now in Los Angeles, giving it before the American Trudeau Society.

"Question: Oh, it has not been published?

"Answer: It hasn't been published.

"Question: Of course, that has nothing to do with smoking. These were children that you were talking about.

"Answer: Non-smokers, and no carcinoma in situ."

We will go to page 40, the second question:

"Question: I believe you eliminated or attempted to eliminate, did you not, Doctor, the cases that had histories of chronic pulmonary tuberculosis?

"Answer: Yes; we did.

"Question: And bronchiectasis?

"Answer: Yes.

"Question: And fungus disease?

"Answer: Yes; we did.

"Question: But you kept no statistics, so to speak, of the number of smokers or non-smokers

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in that group?

"Answer: No.

"Question: They were discarded?

"Answer: No. It would be almost impossible to study them, because so much of their bronchial mucous membrane would be destroyed, anyway.

"Question: I wondered how many smokers and non-smokers were discarded in that category. I guess you didn't keep that.

"Answer: I kept no account of that.

"Question: And you also eliminated non-smokers because of other bronchial and pulmonary disease?

"Answer: Yes.

"Question: And you kept no record of the number in that category?

"Answer: Yes.

"Question: Do you know how many were eliminated because smoking histories could not be obtained?

"Answer: No. I don't know that."

Then, skipping a question:

"Question: You changed your classifications as to how many cigarettes a smoker had to smoke between the two studies, too, didn't you?

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"Answer: I believe so.

"Question: So that you originally regarded a smoker of one to two packs as a moderate smoker, and then you put him over into the heavy smoking category?

"Answer: Yes.

"Question: There aren't any data that have been developed to show the proportion, if any, of the so-called carcinoma in situ that developed into cancer, bronchogenic cancer?

"Answer: No. That's something that's almost impossible to get. The lung, after all, isn't an easy part of the body to get at in life, and it's a very big area. The whole tracheobronchial tree is a tremendous area.

"Question: You did not, in your study, make any conclusions with respect to the possible influence of sex?

"Answer: No, because we hadn't made any proper study of women as yet. We intend to, but we have not as yet."

And skipping a question:

"Question: Doctor, do you feel that heredity is a factor in lung cancer development?

"Answer: I don't really have any intelligent

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opinion about that.

"Question: In any event, that factor wasn't investigated in your study?

"Answer: It wasn't investigated, no.

"Question: In your last study, 1959, is it not a fact that basal cell hyperplasia, stratification, squamos metaplasia and atypical cells all occurred in non-smokers?

"Answer: Yes.

"Question: Your last study, Doctor, your 1959 study does not attempt to compare the slide findings in lung cancer and non-lung cancer cases of comparable smoking history, does it?

"Answer: I don't think so. I don't recall."

The second question on page 44:

"Question: And I take it that really what we have been talking about as the difference between your 1957 and 1959 studies was what you referred to earlier in your direct testimony about the fact that you and Dr. Auerbach might have confused squamous metaplasia with carcinoma in situ?

"Answer: That's correct.

"Question: And that confusion that came about was not rectified by any further study

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on your part but was a difference of classification that you and Dr. Auerbach arrived at two years later of changing some of these individuals which you had classified as squamous metaplasia out of squamous metaplasia, or those that were in carcinoma in situ back into squamous metaplasia?

"Answer: Well, that's a difficult question to answer. As I think I said, we were dissatisfied with our interpretation of all the -- not all -- of all of the material in the 1957 study, and we questioned in our own minds as to whether we had not classified some of the so-called squamous metaplasia as carcinoma in situ, and in order to avoid making the same error, we sat down together and reviewed and revised our thoughts about the whole situation, so that we had a very -- we had very definite criteria to go on in the second study. We only included carcinoma in situ and atypical cells as those cases that showed cells in the mucous membrane or replacing the entire mucous membrane that were distinguishable from cancer cells."

That is all.

MR. HASTINGS: If it please the Court, counsel

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for the defendant has objected to the introduction of the smoking history and would not permit us to read it because he said that was hearsay and I would like to call the Court's attention to the parts he read in which he brought out about the smoking history.

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On page 30, he was discussing about the carcinoma in situ was found in five out of sixteen and how, if it was found at all in non-smokers.

On page 35, he goes again on the first question about twelve heavy smokers and what the findings were in the twelve heavy smokers.

On page 37, he again quotes the doctor and asked the doctor a question with respect to his own study in which he asked about three smoking categories for cancer of the lung.

On page 40, he asked about statistics of the number of smokers or non-smokers in that group.

On page 41, he goes into the question about how many were eliminated with respect to smoking histories.

On page 43, he again now questions about metaplasia and atypical cells occurring in non-smokers.

He brought to the attention of the jury the question of smoking history and yet objected to our introducing it. We should be allowed to read his general

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conclusion, his own conclusions, based on the history since he brought the history into it by reason of his own cross-examination.

THE COURT: If you have it in your redirect, you can put in matters in redirect that might touch upon the cross. I presume there are some matters in there.

On page 10, you asked about how many it covered.

MR. HASTINGS: In order to understand what he was crossing about, I have to read parts of the direct because that is what it relates to.

THE COURT: I am talking about the redirect, 50 and 51.

MR. HASTINGS: What he is referring to is on page 19.

THE COURT: You can't go back to that.

MR. HASTINGS: That is what his cross was on.

THE COURT: You should have objected to it. I probably would have ruled it out. You have it on 50 and 51.

Just because he made an error, I don't see any reason for me to support your error.

MR. HASTINGS: I don't think it was error.

THE COURT: I say and I ruled and I will continue to rule as long as this case goes on, that if a man did not investigate things himself, he could not tell what

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he picked up by hearsay, because it is inaccurate and not subject to cross-examination and it might-- I say, it might lead to very grave error.

I think if you start at 50 and 51 and 52, you will find a lot-- I don't think there is anything in this man's testimony except what is in there, as far as I know. I went over it casually.

MR. HASTINGS: Can we at least read his conclusion? He brought out the smoking history.

THE COURT: I think that is quite evident he has concluded smoking has a lot to do with cancer.

MR. HASTINGS: We ask his own graph be admitted. He questioned now on the particular incidence of this particular thing because he said he examined every slide having to do with carcinoma in situ.

THE COURT: No. This man never went out and asked any one single person who it was. His testimony is absolutely worthless on that score. It is very valuable testimony, what he found, if connected up to the man that made the investigation.

MR. HASTINGS: I will read the redirect.

THE COURT: In your redirect, as I glance at it, apparently the matters you are talking about are substantially covered.

MR. HASTINGS: Page 49:

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"Question: I see. Doctor, with respect to the term, the classification of carcinoma in situ itself, did you say that that picture of carcinoma in situ is indistinguishable or you cannot tell it from actual cancer which has already invaded?

"Answer: Yes. That's correct.

"Except for the fact that it remains in situ, so to speak, in the place where it started, without going away from there--"

MR. DYER: That is a further answer.

MR. HASTINGS (Continuing):

"Question: Tell us, if you will, Doctor, what is the picture of a carcinoma in situ?

"Answer: Well, carcinoma in situ is a change that takes place in all of the cells of a certain part of the body, wherever it may be, so that those cells are indistinguishable from cancer cells that do invade and act like a true cancer.

"Question: All right. With respect to the first study, did you keep that exacting requirement? Did you have that exacting requirement ir 1957?

"Answer: Well, we thought we did, but we

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found out that we were including some changes and calling them carcinoma in situ that were unjustified.

"Question: And in what respect--

"Answer: --in having that term, because the cells on more careful analysis did not show all the changes which we now regard as characteristic of cancer cells.

"Question: Was your 1959 study more exacting or less exacting with respect to--

"Answer: Oh, very much more exacting.

"Question: And, Doctor, did your 1959 study cover more lungs, more people that you actually examined?

"Answer: Yes. Over 400.

"Question: Which is three to four times as many?

"Answer: Yes.

"MR. DYER: I will object to that as leading. It is not three or four times as many, because they went back and took the old cases too.

"THE WITNESS: Some of them.

"MR. DYER: All right.

"Question: Doctor, we are seated here now in New York City, so that we will understand this

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in Miami when we read this statement where we are.

"Is this a medical center that we are in at the moment?

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"Answer: Yes; we are.

"Question: What is the name of this center?

"Answer: Columbia Presbyterian Medical Center.

"Question: How many patients are seen here roughly in the period of a year or so?

"Answer: Somewhere over 2,000. I have often tried to find out how many there were, but they divide them differently in different records, and I have never been able to add them up together. But I know it's over 2,000.

"Question: And, Doctor, do I understand you to say that you have been a research scientist and professor for the greater part of your life?

"MR. DYER: I object to it as leading and repetitious, going through the doctor's qualifications again.

THE COURT: Yes.

MR. HASTINGS: Page 52, again:

"Question: How long have you spent in the field, or have you spent any time in the

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field as a research scientist in the field of tumors and cancers?

"Answer: Let me see. I started in 1910. Well, I would say 50 years.

"Question: Doctor, roughly, how many doctors have you taught in the study of tumors and cancers? Just your best estimate.

"Answer: This will have to be awfully rough.

"Question: Would it number in the thousands, sir?

"Answer: Yes. Well, I would guess 7,500.

"Question: You have a certain number of students that come through each year at this center?

"Answer: Oh, yes. I have students coming in all over the place."

Then over to page 53:

"Question: Doctor, was your 1959 study more conclusive or less conclusive, or how did it compare with the 1957 study?"-- I am sorry.

"Question: How did the 1959 study compare with the 1957 study with respect to the relationship, in your opinion, between smoking and lung cancer?

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"Answer: Well, I think it's much more accurate, and I think its figures are much more to be relied upon.

"Question: And were the conclusions you drew from your 1959 study different from the conclusions you drew from your 1957 study?

"Answer: Yes, but we -- I think we have made them much more strong and more conclusive.

"Question: But I mean, the general conclusions as to the relationship--

"Answer: The general conclusions are about the same."

THE COURT: Tomorrow morning at 10 o'clock.

(Thereupon, the trial recessed at 3:35 o'clock p.m. of the same day, to reconvene Wednesday, July 20, 1960 at 10 o'clock a.m.)

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